

LESSON

Reteach

1-4 Order of Operations

A mathematical phrase that includes only numbers and operations is called a numerical expression.

$9 + 8 \cdot 3 \div 6$ is a numerical expression.

To evaluate a numerical expression, you find its value.

You can use the order of operations to evaluate a numerical expression.

Order of Operations

1. Do all operations within parentheses.
2. Find the values of the numbers with exponents.
3. Multiply and divide in order from left to right.
4. Add or subtract in order from left to right.

Evaluate the expression.

$60 \div (7 + 3) + 7$	Do all operations within parentheses.
$60 \div 10 + 7$	Multiply and divide in order from left to right.
$6 + 7$	Add and subtract in order from left to right.
13	

Evaluate each expression.

1. $7 \cdot (12 + 8) - 6$

$7 \cdot \underline{\hspace{2cm}} - 6$

$\underline{\hspace{2cm}} - 6$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

4. $2^3 + (10 - 4)$

$\underline{\hspace{2cm}}$

7. $5^2 - (2 \cdot 8) + 9$

$\underline{\hspace{2cm}}$

2. $10 \cdot (12 + 34) + 3$

$10 \cdot \underline{\hspace{2cm}} + 3$

$\underline{\hspace{2cm}} + 3$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

5. $7 + 3 \cdot (8 + 5)$

$\underline{\hspace{2cm}}$

8. $3 \cdot (12 \div 4) - 2^2$

$\underline{\hspace{2cm}}$

3. $10 + (6 \cdot 5) - 7$

$10 + \underline{\hspace{2cm}} - 7$

$\underline{\hspace{2cm}} - 7$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

6. $36 \div 4 + 11 \cdot 8$

$\underline{\hspace{2cm}}$

9. $(3^3 + 10) - 2$

$\underline{\hspace{2cm}}$

LESSON

1-4

Practice B

Order of Operations

Evaluate each expression.

1. $10 + 6 \cdot 2$

2. $(15 + 39) \div 6$

3. $(20 - 15) \cdot 2 + 1$

4. $(4^2 + 6) \div 11$

5. $9 + (7 - 1) \cdot 2$

6. $(2 \cdot 4) + 8 - (5 \cdot 3)$

7. $5 + 18 \div 3^2 - 1$

8. $8 + 5 \cdot 10 - 12$

9. $14 + (50 - 7^2) \cdot 3$

Insert parentheses so that each equation is correct.

10. $7 + 9 \cdot 3 - 1 = 25$

11. $2^3 - 7 \cdot 4 = 4$

12. $5 + 6 \cdot 9 \div 3 = 23$

13. $12 \div 3 \cdot 2 = 2$

14. $8 + 3 \cdot 6 - 4 - 1 = 13$

15. $4 \cdot 3^2 + 1 = 40$

16. $9 \cdot 0 + 5 - 3 = 42$

17. $15 \cdot 3^2 - 2^3 = 15$

18. $14 \div 2 + 5 \cdot 5 = 10$

19. Tyler walked 2 miles a day for the first week of his exercise plan. Then he walked 3 miles a day for the next 9 days. How many miles did Tyler walk in all?

20. Paulo's father bought 8 pizzas and 12 bottles of juice for the class party. Each pizza cost \$9 and each bottle of juice cost \$2. Paulo's father paid with a \$100-bill. How much change did he get back?

LESSON
1-3 **Practice B**
Exponents

Write each expression in exponential form.

1. $9 \cdot 9$

2. $7 \cdot 7 \cdot 7$

3. $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$

4. $5 \cdot 5 \cdot 5 \cdot 5$

5. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

6. $10 \cdot 10 \cdot 10 \cdot 10$

Find each value.

7. 6^2

8. 5^3

9. 10^3

10. 7^2

11. 2^5

12. 3^4

13. 25^1

14. 16^0

Compare using $<$, $>$, or $=$.

15. 8^0 7^1

16. 10^2 11^2

17. 8^2 4^3

18. 3^4 5^2

19. 2^5 9^2

20. 6^2 3^3

21. What whole number equals 25 when it is squared and 125 when it is cubed?

22. Use exponents to write the number 81 three different ways.

LESSON

2-1

Practice B
Variables and Expressions

Evaluate each expression to find the missing values in the tables.

1.

n	$n + 8$
7	15
9	
22	
35	

2.

n	$25 - n$
20	5
5	
18	
9	

3.

n	$n \cdot 7$
8	56
9	
11	
12	

4.

n	$24 \div n$
2	12
6	
4	
8	

Find an expression for each table.

5.

n	
35	50
5	20
20	35
85	100

6.

n	
13	26
9	18
30	60
25	50

7. A car is traveling at a speed of 55 miles per hour. You want to write an algebraic expression to show how far the car will travel in a certain number of hours. What will be your constant? your variable?

8. Shawn evaluated the algebraic expression $x \div 4$ for $x = 12$ and gave an answer of 8. What was his error? What is the correct answer?

LESSON **Practice B**
2-2 *Translate Between Words and Math*

Write an expression.

1. Terry's essay has 9 more pages than Stacey's essay. If s represents the number of pages in Stacey's essay, write an expression for the number of pages in Terry's essay.
- _____

2. Let z represent the number of students in a class. Write an expression for the number of students in 3 equal groups.
- _____

Write each phrase as a numerical or algebraic expression.

3. 24 multiplied by 3
- _____

4. n multiplied by 14
- _____

5. w added to 64
- _____

6. the difference of 58 and 6
- _____

7. m subtracted from 100
- _____

8. the sum of 180 and 25
- _____

9. the product of 35 and x
- _____

10. the quotient of 63 and 9
- _____

11. 28 divided by p
- _____

Write two phrases for each expression.

12. $n + 91$
- _____

13. $35 \div r$
- _____

14. $20 - s$
- _____

15. Charles is 3 years older than Paul. If y represents Paul's age, what expression represents Charles's age?
- _____

16. Maya bought some pizzas for \$12 each. If p represents the number of pizzas she bought, what expression shows the total amount she spent?
- _____

LESSON
1-3 Exponents

Problem Solving

1. The Sun is the center of our solar system. The Sun is the star closest to our planet. The surface temperature of the Sun is close to 10,000°F. Write 10,000 using exponents.

2. Patty Berg has won 4^2 major women's titles in golf. Write 4^2 in standard form.

3. William has 3^3 baseball cards and 4^3 football cards. Write the number of baseball cards and footballs cards that William has.

4. Michelle recorded the number of miles she ran each day last year. She used the following expression to represent the total number of miles: $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$. Write this expression using exponents. How many miles did Michelle run last year?

5. In Tyrone's science class he is studying cells. Cell A divides every 30 minutes. If Tyrone starts with two cells, how many cells will he have in 3 hours?

6. Tanisha's soccer team has a phone tree in case a soccer game is postponed or cancelled. The coach calls 2 families. Then each family calls 2 other families. How many families will be notified during the 4th round of calls?

7. The Akashi-Kaiko Bridge is the longest suspension bridge in the world. It is located in Kobe-Naruto, Japan and was completed in 1998. It is about 3^8 feet long. Write the approximate length of the Akashi-Kaiko Bridge in standard form.

8. The Strahov Stadium is the largest sports stadium in the world. It is located in Prague, Czech Republic. Its capacity is about 12^5 . Write the capacity of the Strahov Stadium in standard form.

LESSON

1-4

Problem Solving

Order of Operations

Evaluate each expression to complete the table.

Mammals with the Longest Tails

	Mammal	Expression	Tail Length
1.	Asian elephant	$2 + 3^2 \cdot 7 - (10 - 4)$	
2.	Leopard	$5 \cdot 6 + 5^2$	
3.	African elephant	$6 \cdot (72 \div 8) - 3$	
4.	African buffalo	$51 + 6^2 \div 9 - 12$	
5.	Giraffe	$4^3 - 3 \cdot 7$	
6.	Red kangaroo	$11 + 48 \div 6 \cdot 4$	

Choose the letter for the best answer.

7. Adam and his two brothers went to the zoo. Each ticket to enter the zoo costs \$7. Adam bought two bags of peanuts for \$4 each, and one of his brothers bought a lion poster for \$12. Which expression shows how much money they spent at the zoo in all?
A $7 + 4 + 12$
B $7 \cdot 3 + 4 + 12$
C $7 \cdot 3 + 4 \cdot 2 + 12$
D $(7 \cdot 3) + (4 \cdot 12)$
8. An elephant eats about 500 pounds of grass and leaves every day. There are 2 Africa elephants and 3 Asian elephants living in the City Zoo. How many pounds of grass and leaves do the zookeepers need to order each week to feed all the elephants?
F 2,500 pounds
G 17,500 pounds
H 3,000 pounds
J 21,000 pounds
9. The average giraffe is 18 feet tall. Which of these expressions shows the height of a giraffe?
A $4^2 - 2$
B $3 \cdot 12 \div 4 + 2$
C $3^3 \div 9 \cdot 6$
D $20 \div 5 + 5 - 6$
10. Some kangaroos can cover 30 feet in a single jump! If a kangaroo could jump like that 150 times in a row, how much farther would it need to go to cover a mile? (1 mile = 5,280 feet)
F 780 feet **H** 176 feet
G 26 feet **J** 5,100 feet

LESSON
2-1 **Problem Solving**
Variables and Expressions

Write the correct answer.

1. To cook 4 cups of rice, you use 8 cups of water. To cook 10 cups of rice, you use 20 cups of water. Write an expression to show how many cups of water you should use if you want to cook c cups of rice. How many cups of water should you use to cook 5 cups of rice?

2. Sue earns the same amount of money for each hour that she tutors students in math. In 3 hours, she earns \$27. In 8 hours, she earns \$72. Write an expression to show how much money Sue earns working h hours. At this rate, how much money will Sue earn if she works 12 hours?

3. Bees are one of the fastest insects on Earth. They can fly 22 miles in 2 hours, and 55 miles in 5 hours. Write an expression to show how many miles a bee can fly in h hours. If a bee flies 4 hours at this speed, how many miles will it travel?

4. A friend asks you to think of a number, triple it, and then subtract 2. Write an algebraic expression using the variable x to describe your friend's directions. Then find the value of the expression if the number you think of is 5.

Circle the letter of the correct answer.

5. The rupee is the currency in Pakistan. In 2002, 1 United States dollar was worth 60 rupees! How many rupees were equivalent to 3 United States dollars?
A 3
B 2
C 180
D 60
6. The peso is the currency in Mexico. In 2002, 1 United States dollar was worth 9 pesos. How many pesos were equivalent to 5 United States dollars?
F 45
G 4
H 14
J 54

LESSON
2-2

Problem Solving

Translate Between Words and Math

Write the correct answer.

- | | |
|--|---|
| <p>1. Holly bought 10 comic books. She gave a few of them to Kyle. Let c represent the number of comic books she gave to Kyle. Write an expression for the number of comic books Holly has left.</p> <p>_____</p> | <p>2. Last week, Peter worked 40 hours for \$15 an hour. Write a numerical expression for the total amount Peter earned last week. Write an algebraic expression to show how much Peter earns in h hours at that rate.</p> <p>_____</p> |
| <p>3. The temperature dropped 5°F, and then it went up 3°F. Let t represent the beginning temperature. Write an expression to show the ending temperature.</p> <p>_____</p> | <p>4. Teri baked 48 cookies and divided them evenly into bags. Let n represent the number of cookies Teri put in each bag. Write an expression for the number of bags she filled.</p> <p>_____</p> |
| <p>5. Marisa purchased canned soft drinks for a family reunion. She purchased 1 case of 24 cans and several packages containing 6 cans each. If p represents the number of 6-can packages she purchased, what expression represents the total number of cans Marisa purchased for the reunion?</p> <p>_____</p> | <p>6. Becky has the addresses of many people listed in her e-mail address book. She forwarded a copy of an article to all but 5 of those people. If a represents the number of addresses, what expression represents how many people she sent the article to?</p> <p>_____</p> |

Circle the letter of the correct answer.

- | | |
|---|---|
| <p>7. Mei bought several CDs for \$12 each. Which of the following expressions could you use to find the total amount she spent on the CDs?</p> <p>A $12 + x$</p> <p>B $12 - x$</p> <p>C $12x$</p> <p>D $12 \div x$</p> | <p>8. Tony bought 2 packs of 50 plates and 1 pack of 30 plates. Which of the following expressions could you use to find the total number of plates Tony bought?</p> <p>F $2 + 50 + 30$</p> <p>G $(2 \cdot 50) + 30$</p> <p>H $(2 \cdot 30) + 50$</p> <p>J $2(30 + 50)$</p> |
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